

Activity	Description	Predecessors	Weeks*
A	Prepare concept plan broad scope of the project	Start 1/Jan/2017	16
B	Seek Public Consultation and stakeholder engagement	A	5
C	Prepare Business Case and Obtain Environmental Approvals	B	8
D	Commence and Close the Tender Period	C	11
E	Analyse and award contract to the winning tenderer.	D	10
F	Finalise and submit the detailed design of the Civil, Electrical, Mechanical and the Comms IT engineering works and wait for final approvals.	E	23
G	Ordering of all materials required for the Civil, Electrical, Mechanical and the Comms IT engineering works	F	25
H	Ordering of the carriages for the light rail project	F	16
I	Completion of the Construction Phase – for all the Civil scope of works	G	45
J	Completion of the Construction Phase – for all Electrical, Mechanical and the Comms IT engineering scope of works	I	60
K	Final Commissioning and Project Handover of the total project and commemorate with the Premier at a ribbon cutting ceremony	J	5

The total number of weeks to complete the Project

Therefore, the total number of weeks to build and commence Max Light Rail project is estimated to be 208 weeks.

$$\text{Time to project completion (In years)} = \frac{208}{52} = 4 \text{ years}$$

Deriving the total revenue equation

As the revenue gained by advertising per day is \$4000. Advertising per year can be deduced by multiplying it by 365 days which is shown in the below table;

Advertising per year	4000×365	=1460, 000
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Ticket type		
Distance $\geq 14\text{km}$	$350,000 \times 60\% \times 3$	=630,000
Distance $\geq 7\text{km}$ and $< 14\text{km}$	$350,000 \times 26\% \times 2$	=182,000
Distance $\leq 7\text{km}$	$350,000 \times 14\% \times 1$	=49,000
		=861,000 N

$$\begin{aligned} \text{Total annual revenue} &= \text{Annual ticket sales} + \text{Annual on-board advertising} \\ &= 861,000 \text{ N} + 1460,000 \end{aligned}$$

$$\text{Expences for year 4 in PV} = \frac{\$16\text{m}}{(1+0.025)^4}$$

$$\text{Expences for year 4 in PV} = \$14,495,210$$

$$\text{Expences for year 5 in PV} = \frac{\$6\text{m}}{(1+0.025)^5}$$

$$\text{Expences for year 5 in PV} = \$5,303,126$$

$$\text{Annuity in PV} = A \frac{(1+i)^n - 1}{i(1+i)^n}$$

$$\text{O/T Expences from year 5 - 50} = \$150\text{k} \frac{(1+0.025)^{46} - 1}{0.025(1+0.025)^{46}}$$

$$\text{O/T Expences from year 5 - 50 in PV} = \frac{\$4,073,125}{(1+0.025)^4}$$

$$\text{O/T Expences from year 5 - 50 in PV} = \$3,690,050$$

$$\text{Total Expenditure of the Project} = \$97,322,487$$

$$\text{Total Revenue of the Project in Present Value}$$

$$\text{Annuity in PV} = A \frac{(1+i)^n - 1}{i(1+i)^n}$$

$$\text{Revenue from year 5 - 50} = (\$1.46\text{m} + \$861\text{kN}) \frac{(1+0.025)^{46} - 1}{0.025(1+0.025)^{46}}$$

$$\text{Revenue from year 5 - 50 in PV} = \frac{\$39,645,088 + \$23,379,740 \text{ N}}{(1+0.025)^4}$$